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7590 07/27/2004
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| EXAMINER |
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JUBA JR, JOHN

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| ART UNIT | PAPER NUMBER |
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2872

DATE MAILED: 07/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/686,881

Applicant(s)AMADON ET AL. **Examiner**

John Juba, Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 7-12, 15-23, 25-27, 29, 30, 32 and 34-44 is/are pending in the application.
- 4a) Of the above claim(s) 15-22, 29, 30, 32, 34-44 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1, 7, 23, 25, 26 is/are rejected.
- 7) ☒ Claim(s) 8-12 and 27 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>2/26/2004</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 7 – 12, 26, and 27, drawn to a receiver and channel separating optics, classified in class 398, subclass 43.
- II. Claims 15 – 18 and 29, drawn to an optical receiver and alignment optics, classified in class 398, subclass 118.
- III. Claims 19 – 22 and 30, drawn to an optical receiver and beacon, classified in class 398, subclass 131.
- IV. Claims 34 – 37, 41, and 43, drawn to an optical transceiver with alignment optics and related method, classified in class 398, subclass 129.
- V. Claims 38 – 40 and 44, drawn to an optical transceiver with beacon and related method, classified in class 359, subclass 129.

Claims 1 and 23 essentially link inventions I – III. Claim 25 is not patentably distinct from claim 23 and will be examined with linking claims 1 and 23 if any of groups I – III is elected.

Claims 32 and 42 links specific respective claims of inventions IV and V, and both linking claims will be examined if either groups IV or V are elected.

The inventions are distinct, each from the other because of the following reasons:

Inventions I – V are related as subcombinations disclosed as usable together in a single combination as a transceiver operating over a free space optical communications channel and having manual or automated alignment features. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility as an optical read head in a dynamic optical storage system; inventions II - V have separate utility as optical sensors in an alarm system interconnected by fiber control lines. See MPEP § 806.05(d).

Invention IV is further related to inventions II as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, claims 32 and 42 evidence that the combination of invention IV does not require the particulars of the subcombination of Invention II. The subcombinations have separate utility as set forth above.

Specific claims of Invention IV related to invention II as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the process is practice by an apparatus having a transmitter, but not specifically including a receiver. Such an apparatus is materially different from the apparatus of Invention II, which includes a receiver, but not necessarily a transmitter.

Invention V is further related as to invention III as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, claims 32 and 42 evidence that the combination of invention V does not require the particulars of the subcombination of Invention III. The subcombinations have separate utility as set forth above.

Specific claims of Invention V related to invention III as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the process is practice by an apparatus having a transmitter, but not specifically including a receiver. Such an apparatus is materially different from the apparatus of Invention III, which includes a receiver, but not necessarily a transmitter (as distinguished from an alignment beacon).

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, and because the search required for Group I is not required for groups II – V and the search required for groups IV and V is not required for Groups II and III, restriction for examination purposes as indicated is proper.

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Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

During a telephone conversation with Mr. Todd Becker on or about July 12, 2004 a provisional election was made with traverse to prosecute the invention of Group I, claims 7 – 12, 26, and 27. Affirmation of this election must be made by applicant in replying to this Office action. Claims 15-22, 29, 30, 32, and 34 - 44 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

An Office action on the merits of the elected invention follows.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Dickson, et al (U.S. Patent number 5,691,830). Referring *for example* to Figure 12 and the associated text, Dickson, et al disclose an apparatus or system comprising a holographic optical element (HOE) device (341) in a "receiver unit" (disc drive) and positionable to receive light rays from reflector (342) and passing the incident rays resulting light rays diffracted by an interference pattern recorded in the HOE. Dickson, et al disclose that the HOE has the construction of the holographic quarter wave plate shown for example in Figure 6. As evident by inspection of Figure 6, the HOE device has a first element (208) having a light incident surface; an emulsion material (204) disposed over the second surface of the first element; a second element (206) having a first, adhesive-coated (214) surface disposed over the emulsion material, the second element being structured to pass resulting light rays, derived from the incident rays diffracted by the recorded interference pattern of the first emulsion, in a direction towards a location facing a second surface (toward 210) of the second element). The system has an optical processing unit (340)(372)(380) and (390) to receive the resulting light rays passed by the second element. It may be that the second element is reversed with respect to that shown in Figure 6, but the HOE device nonetheless has an emulsion between first and second elements.

Claims 23 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Amble, et al (U.S. Patent number 6,738,322). Referring *initially* to Figure 2 and the associated text (Col. 7, lines 32+), Amble, et al disclose an apparatus comprising a holographic optical element (HOE) device (holographic optical storage disc) disposed in a "receiver unit"(disc drive), the HOE device including an interference pattern recorded in photopolymer and positionable to face incident rays and being capable of passing the incident rays (in reflection) as resulting light rays diffracted by the recorded interference pattern. The apparatus further comprises a collimating optical assembly (14) positionable between the HOE device and an optical processing unit (26)(28)(36) to collimate the resulting light rays; and an optical element (22) between the collimating optical assembly and the optical processing unit to separate, from the collimated resulting light rays, a tracking channel (24) and a communication channel (12), and to direct the communication channel towards an optical processing unit (52)(54)(56)(58)(62).

Claims 23 and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Campbell, et al (U.S. Patent number 5,973,806; already of record). Referring *for example* to Figure 8 and the associated text, Campbell, et al disclose a hologram (815) disposed in an "optical receiver unit". As disclosed in the discussion of Figures 3 – 6, the hologram comprises a plurality of recorded interference patterns. As discussed in connection with Figure 8, the hologram is positionable to face incident light rays (825)

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which substantially duplicate the reference beam used to record the interference patterns. Receiver (840) fairly constitutes an optical processing unit within the specificity recited. With regard to claim 25, Campbell, et al disclose steering mirrors (830) and (835) as controlling light from the holographic device.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dickson (U.S. Patent number 5,526,144), in view of Bolt (U.S. Patent number 5,095,375). Referring *initially* to Figure 1 and the associated text, Dickson discloses a system comprising a holographic optical element (HOE) device (60) having an element (202) having a first surface (220) disposed over an emulsion material (200) and a second surface (222) structured to pass resulting rays diffracted by an interference pattern formed in the emulsion (as shown in Fig. 2); an optical processing unit (100) to receive the resulting light rays passed by the second element; an optical detector (122) and a beam splitter (90) to direct a first portion (96) of the resulting light rays associated with a tracking operation (servo) towards to optical detector and to direct a second portion (94) of the resulting light rays having data modulated thereon towards the optical processing unit. Thus, Dickson discloses the invention substantially as claimed.

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However, Dickson does not disclose the HOE device as having a first element with a first surface positionable to face incident rays and with the emulsion material over the second surface of the first element.

In the same field of endeavor, Bolt discloses a holographic optical element and teaches that the performance of the HOE is subject to deterioration due to environmental influences, such as the ingress of moisture into the emulsion. In order to overcome this, Bolt teaches the use of first and second elements with a first surface of the first element facing incident rays, and with the emulsion positioned between the second surface of the first element and a first surface of the second element. An edge seal is used to further protect the emulsion from moisture.

It would have been obvious to one of ordinary skill in the art to provide a first element and an edge seal in addition to the second element of Dickson's HOE, in the interest of protecting the HOE from attack by moisture, and thus assuring longevity of the HOE in performing its intended function, as taught by Bolt.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

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Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 1 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 5 of U.S. Patent No. 6,498,662. Although the conflicting claims are not identical, they are not patentably distinct from each other as described below. The two claims are presented below in independent form, with corresponding features labeled (a) – (f).

1. (pending) A system, comprising:

- (a) a holographic optical element (HOE) device having:
- (b) a first element having first and second surfaces, the first surface being positionable to face incident light rays;
- (c) an emulsion material disposed over the second surface of the first element and having a recorded interference pattern thereon; and
- (d) a second element having a first surface disposed over the emulsion material, the second element being structured to pass resulting light rays, derived from the incident light rays diffracted by the recorded interference pattern, in a direction towards a location facing a second surface of the second element; and
- (e) an optical processing unit to receive the resulting light rays passed by the second element.

(U.S. Patent number 6,498,662)

5. An apparatus, comprising:

- (b) a first element having first and second surfaces, the first surface being positionable to face incident light rays;

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(c) an emulsion material disposed over the second surface of the first element

and having an interference pattern recorded thereon;

(d) a second element including a first surface overlying the emulsion material and a second surface, and structured to pass resulting light rays derived from the incident light rays and diffracted from the recorded interference pattern; and

(f) a plurality of reflective elements positioned adjacent to the first and second

surfaces of the second element to fold the resulting light rays within the

second element [.]

(e) [5. The apparatus of claim 1, further comprising] receiver electronics positioned adjacent to the second element to receive the resulting light rays.

It should be apparent that features (b) and (c) differ only in syntax. Both features (d) require the second "element" to have second surface which passes resulting rays. Patented claim 5 differs by not expressly characterizing elements (b), (c), (d), and (e) as a holographic optical element (HOE) device. Nonetheless, it is believed that one of ordinary skill would recognize the combination of elements (b), (c), (d), and (e) of patented claim 5 as comprising a holographic optical element device. That is, it is not clear how the recitation of (a) in the pending claim distinguishes the positively recited structural elements recited in both claims. It is believed that the recitation of an optical processing unit (e) in pending claim 1 is broader than the recitation of receiver electronics in the patented claims, where the receiver electronics are operative to

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receive light rays. Further pending claim 1 is *broader* than the patented claim by omission of a plurality of reflective elements (f) adjacent the second element to fold resulting light rays within the second element. Since it has been held that omission of an element and its corresponding function is an obvious expedient, pending claim 1 is an obvious variant of patented claim 5. Further a structure that infringes patented claim 5 necessarily infringes pending claim 1. Accordingly, a patent granted on the pending claim would permit harassment of multiple assignees.

Allowable Subject Matter

Claims 8 – 12 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art, taken alone or in combination, fails to teach or fairly suggest

a holographic optical element device in combination with a collimating optical assembly *between the HOE device and the optical processing unit* to collimate the resulting light rays, and an optical element *between the collimating optical assembly and the optical processing unit* to separate from the collimate resulting light rays, a tracking channel and a communication channel,

particularly wherein the HOE device has the construction wherein the second element is structured to pass resulting light rays derived from the incident light rays diffracted by the record interference pattern *in a direction towards a location facing a second surface of the second element*, as required by the combination in claim 7; or

wherein the optical element comprises a monolithic optical element including the all of the elements arranged and cooperating in the particular manner recited in claim 27.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Arnold, et al (U.S. Patent number 6,347,001) disclose an optical receiver comprising telescope mirrors and a dichroic mirror to separate a tracking channel from a communication channel.

Bloom, et al (U.S. Patent number 5,710,652) disclose an optical receiving unit with separation of a communication channel from a tracking channel.

Sakanaka, et al (U.S. Patent number 5,594,580) disclose an optical communication apparatus comprising a spotting scope and a beam splitter separating a tracking channel from a communication channel.

Rakuljic, et al (U.S. Patent number 5,440,669) suggest replacing the secondary mirror of a telescope (Fig. 27) to form a self-contained narrowband receiving system with efficiency improved over embodiments employing beam splitters.

Mantravadi, et al (U.S. Patent number 5,206,499) suggest the use of multiple holographic optical elements in a telescope for aberration correction.

All of the references cited during the prosecution of parent application serial numbers 09/627,815 and 09/802,672 have been considered. However, unless they are listed on examiner's form PTO-892, Applicants' form PTO-1449, PTO/SB/08, or equivalent, these references will not appear on the face of any patent issuing from the instant application.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Juba whose telephone number is (571) 272-2314. The examiner can normally be reached on Mon.-Fri. 9 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Drew Dunn whose number is (571) 272-2312 and who can be reached on Mon.- Thu., 9 – 5.

The centralized fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306 for *all* communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2800.


JOHN JUBA, JR.
PRIMARY EXAMINER
Art Unit 2872

July 16, 2004